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SEQUENCE LISTING



<110> TORDO, NOEL
PERRIN, PIERRE
JACOB, YVES
BAHLOUL, CHOKRI

<120> CHIMERIC LYSSAVIRUS NUCLEIC ACIDS AND POLYPEPTIDES

<130> 03495-0188-00000

<140> 09/549,519

<141> 2000-04-14

<150> 60/129,501

<151> 1999-04-15

<160> 40

<170> PatentIn Ver. 2.1

<210> 1

<211> 34

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer

<400> 1

ttctagagcc accatggttc ctcaggctct cctg

34

<210> 2

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer

<400> 2

attgatcaac tgaccgggag ggc

23

<210> 3

<211> 98

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic
oligonucleotide PVp1

<400> 3

aattctagag ccgccaccat gggttcctcag gctctcctgt ttgtaccctt tctggttttt 60
ccattgtgtt ttgggaagaa ttcccccccc ggtcagtt 98

<210> 4
 <211> 98
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 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 oligonucleotide PVp2

<400> 4
 gatcaactga ccgsggggggg aattcttccc aaaacacaat ggaaaaacca gaaggggtac 60
 aaacaggaga gcctgaggaa ccatggtggc ggctctag 98

<210> 5
 <211> 54
 <212> DNA
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 oligonucleotide EBL1p1

<400> 5
 aatttcccaa tctacaccat cccggataaa atcggaccgt ggtcacctat tccg 54

<210> 6
 <211> 54
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 oligonucleotide EBL1p2

<400> 6
 aattcggaat aggtgaccac ggtccgattt tatccgggat ggtgtagatt ggga 54

<210> 7
 <211> 63
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Primer

<400> 7
 ccgtggtcac ctattgatat aaaccatctc agctgcccaa acaacttgat cgtggaagat 60
 gag 63

<210> 8
 <211> 27
 <212> DNA
 <213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer

<400> 8

ggaattcgag caccattctg'gagcttc

27

<210> 9

<211> 11

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic peptide

<400> 9

Asp Asn Pro Ala Ser Thr Thr Asn Lys Asp Lys

1

5

10

<210> 10

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic peptide

<400> 10

Pro Gln Ala Ser Gly Val Tyr Met Gly

1

5

<210> 11

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Synthetic peptide

<400> 11

Glu Arg Pro Gln Ala Ser Gly Val Tyr Met Gly Asn Leu Thr Ala Gln

1

5

10

15

<210> 12

<211> 78

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer

<400> 12
aattcagata acccggcgtc gaccactaac aaggataagc tgttcgcagt gcctcaggcc 60
tctggtgtgt atatgggt 78

<210> 13
<211> 78
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Primer

<400> 13
aattacccat atacacacca gaggcctgag gcactgcgaa cagcttatcc ttgtagtgg 60
tcgacgccgg gttatctg 78

<210> 14
<211> 32
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic adaptor

<400> 14
aatttgata acccggcgtc gaccactaac aa 32

<210> 15
<211> 32
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic adaptor

<400> 15
aattcttacc cttgtagtg gtcgacgccg gg 32

<210> 16
<211> 54
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: Synthetic adaptor

<400> 16
aatttgaga gacctcaggc ctctggtgtg tatatgggta atcttacggc ccag 54

<210> 17

<211> 54
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Synthetic
 adaptor

<400> 17
 aattctggga agtaagatta cccatataca caccagaggc ctgaggtctc tcca 54

<210> 18
 <211> 61
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Chimeric
 polypeptide PV-PV

<400> 18
 Val Leu Gly Leu Arg Leu Met Asp Gly Thr Trp Val Ser Met Gln Thr
 1 5 10 15
 Ser Asn Glu Thr Lys Trp Cys Pro Pro Gly Gln Leu Ile Asn Leu His
 20 25 30
 Asp Phe Arg Ser Asp Glu Ile Glu His Leu Val Val Glu Glu Leu Val
 35 40 45
 Lys Lys Arg Glu Glu Cys Leu Asp Ala Leu Glu Ser Ile
 50 55 60

<210> 19
 <211> 39
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> Description of Artificial Sequence: Chimeric
 polypeptide -PVIII

<400> 19
 Ser Pro Pro Gly Gln Leu Ile Asn Leu His Asp Phe Arg Ser Asp Glu
 1 5 10 15
 Ile Glu His Leu Val Val Glu Glu Leu Val Lys Lys Arg Glu Glu Cys
 20 25 30
 Leu Asp Ala Leu Glu Ser Ile
 35

<210> 20
 <211> 64
 <212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Chimeric polypeptide 'EBL1-PV'

<400> 20

Val	Pro	Gly	Met	Arg	Leu	Met	Asp	Gly	Ser	Trp	Val	Ser	Leu	Gln	Lys
1				5					10					15	
Thr	Glu	Ala	Pro	Glu	Trp	Cys	Ser	Asn	Ser	Pro	Pro	Gly	Gln	Leu	Ile
			20					25					30		
Asn	Leu	His	Asp	Phe	Arg	Ser	Asp	Glu	Ile	Glu	His	Leu	Val	Val	Glu
		35					40					45			
Glu	Leu	Val	Lys	Lys	Arg	Glu	Glu	Cys	Leu	Asp	Ala	Leu	Glu	Ser	Ile
	50					55					60				

<210> 21

<211> 61

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Chimeric polypeptide Mok-PV

<400> 21

Arg	Pro	Gly	Ile	Arg	Leu	Phe	Asp	Gly	Thr	Trp	Val	Ser	Phe	Thr	Lys
1				5					10					15	
Pro	Asp	Val	His	Val	Trp	Cys	Thr	Pro	Asn	Gln	Leu	Ile	Asn	Leu	His
		20						25					30		
Asp	Phe	Arg	Ser	Asp	Glu	Ile	Glu	His	Leu	Val	Val	Glu	Glu	Leu	Val
		35					40					45			
Lys	Lys	Arg	Glu	Glu	Cys	Leu	Asp	Ala	Leu	Glu	Ser	Ile			
	50					55					60				

<210> 22

<211> 61

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Chimeric polypeptide PV-Mok

<400> 22

Val	Leu	Gly	Leu	Arg	Leu	Met	Asp	Gly	Thr	Trp	Val	Ser	Met	Gln	Thr
1				5					10					15	
Ser	Asn	Glu	Thr	Lys	Trp	Cys	Pro	Pro	Gly	Gln	Leu	Ile	Asn	Ile	His
		20						25					30		

Asn Asp Arg Leu Asp Glu Ile Glu His Leu Ile Val Glu Asp Ile Ile
 35 40 45

Lys Lys Arg Glu Glu Cys Leu Asp Thr Leu Glu Thr Ile
 50 55 60

<210> 23

<211> 61

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Chimeric
 polypeptide Mok-Sad

<400> 23

Lys Pro Gly Ile Arg Leu Phe Asp Gly Thr Trp Val Ser Phe Thr Lys
 1 5 10 15

Pro Asp Glu Thr Lys Trp Cys Pro Pro Asp Lys Leu Val Asn Leu His
 20 25 30

Asp Phe Arg Ser Asp Glu Ile Glu His Leu Val Val Glu Glu Leu Val
 35 40 45

Arg Lys Arg Glu Glu Cys Leu Asp Ala Leu Glu Ser Ile
 50 55 60

<210> 24

<211> 524

<212> PRT

<213> Lyssavirus sp.

<220>

<223> PV

<400> 24

Met Val Pro Gln Ala Leu Leu Phe Val Pro Leu Leu Val Phe Pro Leu
 1 5 10 15

Cys Phe Gly Lys Phe Pro Ile Tyr Thr Ile Pro Asp Lys Leu Gly Pro
 20 25 30

Trp Ser Pro Ile Asp Ile His His Leu Ser Cys Pro Asn Asn Leu Val
 35 40 45

Val Glu Asp Glu Gly Cys Thr Asn Leu Ser Gly Phe Ser Tyr Met Glu
 50 55 60

Leu Lys Val Gly Tyr Ile Ser Ala Ile Lys Met Asn Gly Phe Thr Cys
 65 70 75 80

Thr Gly Val Val Thr Glu Ala Glu Thr Tyr Thr Asn Phe Val Gly Tyr
 85 90 95

Val	Thr	Thr	Thr	Phe	Lys	Arg	Lys	His	Phe	Arg	Pro	Thr	Pro	Asp	Ala	100	105	110	
Cys	Arg	Ala	Ala	Tyr	Asn	Trp	Lys	Met	Ala	Gly	Asp	Pro	Arg	Tyr	Glu	115	120	125	
Glu	Ser	Leu	His	Asn	Pro	Tyr	Pro	Asp	Tyr	His	Trp	Leu	Arg	Thr	Val	130	135	140	
Lys	Thr	Thr	Lys	Glu	Ser	Leu	Val	Ile	Ile	Ser	Pro	Ser	Val	Ala	Asp	145	150	155	160
Leu	Asp	Pro	Tyr	Asp	Arg	Ser	Leu	His	Ser	Arg	Val	Phe	Pro	Gly	Gly	165	170	175	
Asn	Cys	Ser	Gly	Val	Ala	Val	Ser	Ser	Thr	Tyr	Cys	Ser	Thr	Asn	His	180	185	190	
Asp	Tyr	Thr	Ile	Trp	Met	Pro	Glu	Asn	Pro	Arg	Leu	Gly	Met	Ser	Cys	195	200	205	
Asp	Ile	Phe	Thr	Asn	Ser	Arg	Gly	Lys	Arg	Ala	Ser	Lys	Gly	Ser	Glu	210	215	220	
Thr	Cys	Gly	Phe	Val	Asp	Glu	Arg	Gly	Leu	Tyr	Lys	Ser	Leu	Lys	Gly	225	230	235	240
Ala	Cys	Lys	Leu	Lys	Leu	Cys	Gly	Val	Leu	Gly	Leu	Arg	Leu	Met	Asp	245	250	255	
Gly	Thr	Trp	Val	Ala	Met	Gln	Thr	Ser	Asn	Glu	Thr	Lys	Trp	Cys	Pro	260	265	270	
Pro	Gly	Gln	Leu	Val	Asn	Leu	His	Asp	Phe	Arg	Ser	Asp	Glu	Ile	Glu	275	280	285	
His	Leu	Val	Val	Glu	Glu	Leu	Val	Lys	Lys	Arg	Glu	Glu	Cys	Leu	Asp	290	295	300	
Ala	Leu	Glu	Ser	Ile	Met	Thr	Thr	Lys	Ser	Val	Ser	Phe	Arg	Arg	Leu	305	310	315	320
Ser	His	Leu	Arg	Lys	Leu	Val	Pro	Gly	Phe	Gly	Lys	Ala	Tyr	Thr	Ile	325	330	335	
Phe	Asn	Lys	Thr	Leu	Met	Glu	Ala	Asp	Ala	His	Tyr	Lys	Ser	Val	Arg	340	345	350	
Thr	Trp	Asn	Glu	Ile	Ile	Pro	Ser	Lys	Gly	Cys	Leu	Arg	Val	Gly	Gly	355	360	365	
Arg	Cys	His	Pro	His	Val	Asn	Gly	Val	Phe	Phe	Asn	Gly	Ile	Ile	Leu	370	375	380	
Gly	Pro	Asp	Gly	Asn	Val	Leu	Ile	Pro	Glu	Met	Gln	Ser	Ser	Leu	Leu	385	390	395	400

Gln Gln His Met Glu Leu Leu Val Ser Ser Val Ile Pro Leu Met His
 405 410 415
 Pro Leu Ala Asp Pro Ser Thr Val Phe Lys Asn Gly Asp Glu Ala Glu
 420 425 430
 Asp Phe Val Glu Val His Leu Pro Asp Val His Glu Arg Ile Ser Gly
 435 440 445
 Val Asp Leu Gly Leu Pro Asn Trp Gly Lys Tyr Val Leu Leu Ser Ala
 450 455 460
 Gly Ala Leu Thr Ala Leu Met Leu Ile Ile Phe Leu Met Thr Cys Trp
 465 470 475 480
 Arg Arg Val Asn Arg Ser Glu Pro Thr Gln His Asn Leu Arg Gly Thr
 485 490 495
 Gly Arg Glu Val Ser Val Thr Pro Gln Ser Gly Lys Ile Ile Ser Ser
 500 505 510
 Trp Glu Ser Tyr Lys Ser Gly Gly Glu Thr Gly Leu
 515 520

<210> 25
 <211> 524
 <212> PRT
 <213> Lyssavirus sp.

<220>
 <223> USA7-BT

<400> 25
 Met Ile Pro Gln Ala Leu Leu Phe Val Pro Leu Leu Ile Pro Ser Leu
 1 5 10 15
 Cys Leu Gly Glu Phe Pro Ile Tyr Thr Ile Pro Asp Lys Leu Gly Pro
 20 25 30
 Trp Thr Pro Ile Asp Ile His His Leu Ser Cys Pro Asn Asn Leu Val
 35 40 45
 Ala Glu Asn Asp Gly Cys Thr Ser Leu Ser Gly Phe Ser Tyr Met Glu
 50 55 60
 Leu Lys Val Gly Tyr Ile Ser Ala Ile Lys Val Asn Gly Phe Thr Cys
 65 70 75 80
 Thr Gly Val Val Thr Glu Ala Glu Thr Tyr Thr Asn Phe Val Gly Tyr
 85 90 95
 Val Thr Thr Thr Phe Lys Arg Lys His Phe Arg Pro Met Pro Asp Ala
 100 105 110
 Cys Arg Ala Ala His Asp Trp Lys Met Ala Gly Asp Pro Arg Tyr Glu
 115 120 125

Asp Ser Leu Gln Asn Pro Tyr Pro Asp Tyr His Trp Leu Arg Thr Val
 130 135 140
 Lys Thr Thr Lys Glu Ser Leu Val Ile Ile Ser Pro Ser Val Ala Asp
 145 150 155 160
 Leu Asp Pro Tyr Asp Lys Ser Leu His Ser Arg Val Phe Pro Ser Gly
 165 170 175
 Lys Cys Leu Gly Ile Thr Val Ser Ser Thr Tyr Cys Ser Thr Asn His
 180 185 190
 Asp Tyr Thr Ile Trp Met Pro Val Glu Pro Arg Leu Gly Thr Ser Cys
 195 200 205
 Asp Ile Phe Thr Asn Ser Arg Gly Lys Arg Ala Ser Lys Gly Gly Arg
 210 215 220
 Val Cys Gly Phe Val Asp Glu Arg Gly Leu Tyr Lys Ser Leu Lys Gly
 225 230 235 240
 Ala Cys Lys Leu Lys Leu Cys Gly Val Pro Gly Ile Arg Leu Met Asp
 245 250 255
 Gly Thr Trp Val Ser Ile Gln Thr Ser Glu Asp Ile Lys Trp Cys Pro
 260 265 270
 Pro Asp Arg Leu Val Asn Leu His Asp Phe His Ser Asp Glu Leu Glu
 275 280 285
 His Leu Val Val Glu Glu Leu Ile Lys Arg Arg Glu Asn Cys Leu Asp
 290 295 300
 Ala Leu Glu Ser Ile Met Thr Thr Lys Ser Val Ser Phe Arg Arg Leu
 305 310 315 320
 Ser His Leu Arg Arg Leu Val Pro Gly Phe Gly Lys Ala Tyr Thr Ile
 325 330 335
 Phe Asn Lys Thr Leu Ile Glu Ala Asp Ala His Tyr Lys Ser Ile Lys
 340 345 350
 Thr Trp Asn Glu Val Ile Pro Ser Lys Gly Cys Leu Glu Val Gly Gly
 355 360 365
 Lys Cys His Pro Pro Val Asn Gly Val Phe Phe Asn Gly Ile Ile Leu
 370 375 380
 Gly Pro Asp Gly Asn Val Leu Ile Pro Glu Met Gln Ser Ser Leu Leu
 385 390 395 400
 Gln Gln His Met Glu Leu Leu Glu Ser Ser Val Ile Pro Leu Met His
 405 410 415
 Pro Leu Ala Asp Pro Ser Thr Val Phe Lys Glu Gly Asp Glu Ala Glu
 420 425 430

Asp Phe Val Glu Val His Leu Pro Asp Val His Lys Arg Ile Ser Gly
 435 440 445

Val Asp Leu Gly Leu Pro Ser Trp Gly Lys Tyr Leu Leu Met Ser Ala
 450 455 460

Gly Ala Leu Ala Ile Leu Ile Leu Ala Ile Val Leu Ile Ile Cys Cys
 465 470 475 480

Arg Arg Val Asn Lys Thr Gly Ser Thr Gln Arg Gly His Arg Glu Ser
 485 490 495

Arg Gly Lys Met Ser Val Ala Pro Gln Asn Gly Lys Ile Ile Ser Ser
 500 505 510

Trp Glu Leu Tyr Lys Arg Glu Ser Glu Thr Gly Leu
 515 520

<210> 26

<211> 525

<212> PRT

<213> Lyssavirus sp.

<220>

<223> PL

<400> 26

Met Leu Leu Gln Ile Val Leu Leu Met Ser Leu Met Val Phe Ser Pro
 1 5 10 15

Cys Pro Gly Lys Phe Pro Leu Tyr Thr Ile Pro Asp Lys Leu Gly Pro
 20 25 30

Trp Ser Pro Ile Asp Ile His His Leu Ser Cys Pro Asn Asn Leu Ile
 35 40 45

Val Glu Asp Glu Gly Cys Thr Ser Leu Ser Gly Phe Ser Tyr Met Glu
 50 55 60

Leu Lys Val Gly Phe Ile Thr Thr Ile Lys Val Ser Gly Phe Thr Cys
 65 70 75 80

Thr Gly Val Val Thr Glu Ser Glu Thr Tyr Thr Asn Phe Phe Gly Tyr
 85 90 95

Val Thr Thr Thr Phe Lys Arg Lys His Phe Arg Pro Thr Pro Glu Phe
 100 105 110

Cys Arg Asn Ala Tyr Asn Trp Lys Val Ala Gly Asp Pro Arg Tyr Glu
 115 120 125

Glu Ser Leu His Asn Pro Tyr Pro Asp Tyr His Trp Leu Arg Thr Val
 130 135 140

Thr Thr Thr Lys Glu Ser Leu Leu Ile Ile Ser Pro Ser Val Val Asp
 145 150 155 160

Met	Asp	Pro	Tyr	Asp	Lys	Ser	Leu	His	Ser	Lys	Met	Phe	Pro	Lys	Gly	165	170	175
Thr	Cys	Ser	Gly	Ala	Ser	Val	Pro	Ser	Ile	Phe	Cys	Ser	Thr	Asn	His	180	185	190
Asp	Tyr	Thr	Leu	Trp	Met	Pro	Glu	Asn	Pro	Lys	Pro	Gly	Met	Ser	Cys	195	200	205
Asp	Ile	Phe	Thr	Thr	Ser	Lys	Gly	Lys	Lys	Ala	Ser	Lys	Gly	Gly	Lys	210	215	220
Val	Cys	Gly	Phe	Val	Asp	Glu	Arg	Gly	Leu	Tyr	Lys	Ser	Leu	Lys	Gly	225	230	235
Ala	Cys	Lys	Leu	Lys	Leu	Cys	Gly	Ile	Ser	Gly	Leu	Arg	Leu	Met	Asp	245	250	255
Gly	Ser	Trp	Val	Ser	Ile	Gln	Asn	His	Glu	Glu	Ala	Lys	Trp	Cys	Ser	260	265	270
Pro	Asp	Gln	Leu	Val	Asn	Ile	His	Asp	Phe	His	Ser	Asp	Glu	Ile	Glu	275	280	285
His	Leu	Ile	Val	Glu	Glu	Leu	Val	Arg	Lys	Arg	Glu	Glu	Cys	Leu	Asp	290	295	300
Ala	Leu	Glu	Ser	Ile	Met	Thr	Thr	Lys	Ser	Val	Ser	Phe	Arg	Arg	Leu	305	310	315
Ser	His	Leu	Arg	Lys	Leu	Val	Pro	Gly	Phe	Gly	Lys	Ala	Tyr	Thr	Ile	325	330	335
Val	Asn	Lys	Thr	Leu	Met	Glu	Ala	Asp	Ala	His	Tyr	Asn	Gln	Val	Arg	340	345	350
Thr	Trp	Asn	Glu	Ile	Ile	Pro	Ser	Lys	Gly	Cys	Leu	Lys	Val	Arg	Glu	355	360	365
Arg	Cys	His	Pro	Pro	Tyr	Asn	Gly	Val	Phe	Phe	Asn	Gly	Ile	Ile	Leu	370	375	380
Ser	Pro	Asp	Gly	His	Val	Leu	Ile	Pro	Glu	Met	Gln	Ser	Ser	Leu	Leu	385	390	395
Gln	Gln	His	Ile	Glu	Leu	Leu	Glu	Ser	Ser	Val	Ile	Pro	Leu	Ile	His	405	410	415
Pro	Leu	Ala	Asp	Pro	Ser	Thr	Val	Phe	Tyr	Arg	Asp	Asp	Glu	Ala	Glu	420	425	430
Asp	Phe	Ile	Glu	Val	His	Leu	Pro	Asp	Val	Gln	Lys	Gln	Val	Ser	Gly	435	440	445
Ile	Asp	Leu	Gly	Leu	Ser	Glu	Trp	Glu	Arg	Tyr	Leu	Ile	Ile	Gly	Ala	450	455	460

Ser Ala Val Ile Leu Phe Ala Leu Ala Ile Ile Phe Ala Val Cys Cys
465 470 475 480

Arg Arg Cys Lys Arg Arg Lys Lys Ala Arg Thr Asp Arg Ile Glu Leu
485 490 495

Asp Arg Lys Val Ser Val Thr Ser Gln Ser Gly Lys Val Ile Pro Ser
500 505 510

Trp Glu Ser Tyr Lys Leu Pro Lys Ser His Phe Arg Ser
515 520 525

<210> 27

<211> 524

<212> PRT

<213> Lyssavirus sp.

<220>

<223> EBL1POL

<400> 27

Met Leu Leu Ser Thr Ala Ile Phe Ala Phe Phe Leu Asn Cys Ala Pro
1 5 10 15

Cys Leu Ala Lys Phe Pro Ile Tyr Thr Ile Pro Asp Lys Ile Gly Pro
20 25 30

Trp Ser Pro Ile Asp Ile Asn His Leu Ser Cys Pro Asn Asn Leu Ile
35 40 45

Val Glu Asp Glu Gly Cys Thr Thr Leu Thr Pro Phe Ser Tyr Met Glu
50 55 60

Leu Lys Val Gly Tyr Ile Thr Thr Ile Ile Glu Ser Gly Phe Thr Cys
65 70 75 80

Thr Gly Val Ile Thr Glu Ala Glu Thr Tyr Thr Asn Phe Val Gly Tyr
85 90 95

Val Thr Thr Thr Phe Lys Arg Lys His Phe Arg Pro Thr Val Ser Ala
100 105 110

Cys Arg Asp Ala Tyr Asn Trp Lys Ile Thr Gly Asp Pro Arg Tyr Glu
115 120 125

Glu Ser Leu His Asn Pro Tyr Pro Asp Ser His Trp Leu Arg Thr Val
130 135 140

Lys Thr Thr Lys Glu Ser Leu Leu Ile Ile Ser Pro Ser Val Val Asp
145 150 155 160

Met Asp Ala Tyr Asp Lys Asn Leu Tyr Ser Lys Met Phe Pro Asn Gly
165 170 175

Lys Cys Leu Ala Ser Pro Pro Ser Ala Ile Cys Cys Pro Thr Asn His
180 185 190

Asp Tyr Thr Ile Trp Ile Pro Glu Asn Pro Lys Pro Gly Leu Ser Cys
 195 200 205
 Asp Ile Phe Thr Thr Ser Lys Gly Lys Lys Ala Thr Lys Asp Gly Arg
 210 215 220
 Leu Cys Gly Phe Val Asp Glu Arg Gly Leu Tyr Lys Ser Leu Lys Gly
 225 230 235 240
 Ala Cys Lys Leu Arg Leu Cys Gly Val Pro Gly Met Arg Leu Met Asp
 245 250 255
 Gly Ser Trp Val Ser Leu Gln Lys Thr Glu Ala Pro Glu Trp Cys Ser
 260 265 270
 Pro Asp Gln Leu Val Asn Val His Asp Phe His Thr Asp Glu Ile Glu
 275 280 285
 His Leu Val Val Glu Glu Leu Val Lys Lys Arg Glu Glu Cys Leu Asp
 290 295 300
 Ala Leu Glu Thr Ile Ile Thr Thr Lys Ser Ile Ser Phe Arg Arg Leu
 305 310 315 320
 Ser His Phe Arg Lys Leu Val Pro Gly Phe Gly Lys Ala Tyr Thr Leu
 325 330 335
 Ile Asn Lys Thr Leu Met Glu Ala Asp Ala His Tyr Lys Ser Val Arg
 340 345 350
 Glu Trp Lys Glu Val Ile Pro Ser Lys Gly Cys Leu Met Ala Gly Gly
 355 360 365
 Arg Cys His Pro His Tyr Ser Gly Ile Phe Phe Asn Gly Ile Ile Leu
 370 375 380
 Ser Pro Gly Gly Asp Val Leu Ile Pro Glu Met Gln Ser Ala Leu Leu
 385 390 395 400
 Gln Gln His Ile Glu Leu Leu Glu Ser Ser Met Ile Pro Leu Arg His
 405 410 415
 Pro Leu Ala Asp Pro Ser Thr Val Phe Arg Lys Asp Asp Glu Ala Glu
 420 425 430
 Asp Phe Val Glu Val His Leu Pro Asp Thr Gln Lys Leu Ile Ser Gly
 435 440 445
 Ile Asp Leu Gly Phe Pro Glu Trp Lys Arg Tyr Phe Leu Ile Gly Ile
 450 455 460
 Ser Val Leu Ala Leu Leu Ala Leu Ala Ile Ile Thr Ala Ala Cys Cys
 465 470 475 480
 Lys Arg Phe Lys Arg Arg Arg Arg Pro Lys Pro Asn Pro Ile Glu Leu
 485 490 495

Ile Arg Lys Val Ser Val Thr Ser Gln Ser Gly Arg Ala Ile Pro Ser
 500 505 510

Trp Glu Ser Tyr Lys Val Gly Pro Pro Gly Glu Ser
 515 520

<210> 28

<211> 524

<212> PRT

<213> Lyssavirus sp.

<220>

<223> EBL1FRA

<400> 28

Met Leu Leu Ser Thr Ala Ile Phe Ala Phe Phe Leu Asn Cys Ala Pro
 1 5 10 15

Cys Leu Gly Lys Phe Pro Ile Tyr Thr Ile Pro Asp Lys Ile Gly Pro
 20 25 30

Trp Ser Pro Ile Asp Ile Asn His Leu Ser Cys Pro Asn Asn Leu Ile
 35 40 45

Val Glu Asp Glu Gly Cys Thr Thr Leu Thr Pro Phe Ser Tyr Met Glu
 50 55 60

Leu Lys Val Gly Tyr Ile Thr Thr Ile Lys Ile Glu Gly Phe Thr Cys
 65 70 75 80

Thr Gly Val Ile Thr Glu Ala Glu Thr Tyr Thr Asn Phe Val Gly Tyr
 85 90 95

Val Thr Thr Thr Phe Lys Arg Lys His Phe Arg Pro Thr Val Ser Ala
 100 105 110

Cys Arg Asp Ala Tyr Asn Trp Lys Ile Thr Gly Asp Pro Arg Tyr Glu
 115 120 125

Glu Ser Leu His Asn Pro Tyr Pro Asp Ser His Trp Leu Arg Thr Val
 130 135 140

Lys Thr Thr Lys Glu Ser Leu Leu Ile Ile Ser Pro Ser Val Val Asp
 145 150 155 160

Met Asp Ala Tyr Asp Lys Asn Leu Tyr Ser Lys Met Phe Pro Asn Gly
 165 170 175

Lys Cys Leu Ala Ser Pro Pro Ser Ala Thr Cys Cys Pro Thr Asn His
 180 185 190

Asp Tyr Thr Ile Trp Ile Pro Glu Asn Pro Lys Pro Gly Leu Ser Cys
 195 200 205

Asp Ile Phe Thr Thr Ser Lys Gly Lys Lys Ala Thr Lys Asp Gly Lys
 210 215 220

Leu Cys Gly Phe Val Asp Glu Arg Gly Leu Tyr Lys Ser Leu Lys Gly	225	230	235	240
Ala Cys Lys Leu Arg Leu Cys Gly Val Pro Gly Met Arg Leu Met Asp		245	250	255
Gly Ser Trp Val Ser Leu Gln Lys Thr Glu Ala Pro Glu Trp Cys Ser		260	265	270
Pro Asp Arg Leu Val Asn Ile His Asp Phe His Thr Asp Glu Ile Glu	275		280	285
His Leu Val Val Glu Glu Leu Val Lys Lys Arg Glu Glu Cys Leu Asp	290		295	300
Ala Leu Glu Thr Ile Ile Thr Thr Lys Ser Ile Ser Phe Arg Arg Leu	305		310	315
Ser His Phe Arg Lys Leu Val Pro Gly Phe Gly Lys Ala Tyr Thr Leu		325	330	335
Ile Asn Lys Thr Leu Met Glu Ala Asp Ala His Tyr Lys Ser Val Arg		340	345	350
Glu Trp Thr Glu Val Ile Pro Ser Lys Gly Cys Leu Met Ala Gly Gly		355	360	365
Arg Cys His Pro His Tyr Ser Gly Ile Phe Phe Asn Gly Ile Ile Leu	370		375	380
Ser Pro Gly Gly Asp Val Leu Ile Pro Glu Met Gln Ser Ala Leu Leu	385		390	395
Gln Gln His Ile Glu Leu Leu Glu Ser Ser Met Ile Pro Leu Arg His		405	410	415
Pro Leu Ala Asp Pro Ser Thr Val Phe Lys Arg Asp Asp Glu Ala Glu		420	425	430
Asp Phe Val Glu Val His Leu Pro Asp Thr Gln Lys Leu Ile Ser Gly		435	440	445
Ile Asp Leu Gly Phe Pro Glu Trp Lys Arg Tyr Phe Leu Ile Gly Ile	450		455	460
Ser Val Leu Ala Leu Leu Ala Leu Ala Ile Ile Thr Ala Ala Cys Cys	465		470	475
Lys Arg Phe Lys Arg Arg Arg Arg Pro Lys Pro Asn Pro Ile Glu Leu		485	490	495
Ile Arg Lys Val Ser Val Thr Ser Gln Ser Gly Arg Ala Ile Pro Ser		500	505	510
Trp Glu Ser Tyr Lys Val Gly Thr Thr Ser Glu Ser	515		520	

<210> 29
 <211> 524
 <212> PRT
 <213> Lyssavirus sp.

<220>
 <223> EBL2FIN

<400> 29

Met Pro Phe Gln Thr Val Leu Ser Ala Leu Leu Ser Ala Leu Thr Leu
 1 5 10 15

Cys Ala Gly Lys Phe Pro Ile Tyr Thr Ile Pro Asp Lys Leu Gly Pro
 20 25 30

Trp Ser Pro Ile Asp Ile His His Leu Ser Cys Pro Thr Asn Met Val
 35 40 45

Val Glu Asp Glu Gly Cys Thr Thr Leu Thr Val Phe Ser Tyr Met Glu
 50 55 60

Leu Arg Val Gly Tyr Ile Thr Thr Ile Lys Val Asp Gly Phe Thr Cys
 65 70 75 80

Thr Gly Val Val Thr Glu Ala Glu Thr Tyr Thr Asn Phe Val Gly Tyr
 85 90 95

Val Thr Thr Thr Phe Lys Arg Lys His Phe Arg Pro Ser Pro Ser Ala
 100 105 110

Cys Arg Asp Ala Tyr Ser Trp Lys Asn Ala Gly Asp Pro Arg Tyr Glu
 115 120 125

Glu Ser Leu His Asn Pro Tyr Pro Asp Ser His Trp Leu Arg Thr Val
 130 135 140

Thr Thr Thr Lys Glu Ser Leu Leu Ile Ile Ser Pro Ser Val Val Asn
 145 150 155 160

Met Asp Ala Tyr Asp Lys Thr Leu Tyr Ser Lys Ile Phe Leu Asn Gly
 165 170 175

Lys Cys Ser Gly Val Ser Gln Val Ser Pro Phe Cys Ser Thr Asn His
 180 185 190

Asp Tyr Thr Ile Trp Met Pro Glu Asn Pro Asn Pro Gly Val Ser Cys
 195 200 205

Asp Ile Phe Thr Thr Ser Lys Gly Lys Lys Ala Thr Lys Asp Gly Lys
 210 215 220

Leu Cys Gly Phe Val Asp Glu Arg Gly Leu Tyr Lys Ser Leu Lys Gly
 225 230 235 240

Ala Cys Lys Leu Lys Leu Cys Gly Ile Ser Gly Met Arg Leu Met Asp
 245 250 255

Gly	Ser	Trp	Val	Ser	Ile	Gln	Asn	His	Asp	Glu	Ala	Lys	Trp	Cys	Ser	260	265	270
Pro	Asp	Gln	Leu	Val	Asn	Ile	His	Asp	Phe	His	Ser	Asp	Glu	Val	Glu	275	280	285
His	Leu	Ile	Ala	Glu	Glu	Leu	Val	Lys	Lys	Arg	Glu	Glu	Cys	Leu	Asp	290	295	300
Ala	Leu	Glu	Ser	Ile	Met	Thr	Thr	Lys	Ser	Ile	Ser	Phe	Arg	Arg	Leu	305	310	315
Ser	His	Leu	Arg	Lys	Leu	Val	Pro	Gly	Phe	Gly	Lys	Ala	Tyr	Thr	Ile	325	330	335
Ile	Asn	Lys	Thr	Leu	Met	Glu	Ala	Asp	Ala	His	Tyr	Lys	Ser	Ile	Arg	340	345	350
Glu	Trp	Thr	Asp	Val	Ile	Pro	Ser	Lys	Gly	Cys	Leu	Met	Ala	Gly	Gly	355	360	365
Arg	Cys	Tyr	Pro	His	His	Asn	Gly	Val	Phe	Phe	Asn	Gly	Ile	Ile	Leu	370	375	380
Ser	Pro	Asp	Gly	His	Val	Leu	Ile	Pro	Glu	Met	Gln	Ser	Ala	Met	Leu	385	390	395
Gln	Gln	His	Ile	Glu	Leu	Leu	Glu	Ser	Ser	Val	Ile	Pro	Leu	Met	His	405	410	415
Pro	Leu	Ala	Asp	Pro	Ser	Thr	Ile	Phe	Lys	Lys	Asp	Asp	Gly	Ala	Glu	420	425	430
Asp	Phe	Val	Glu	Val	His	Leu	Pro	Asp	Val	Gln	Lys	Gln	Ile	Ser	Gly	435	440	445
Ile	Asp	Leu	Gly	Leu	Pro	Glu	Trp	Lys	Arg	Tyr	Phe	Leu	Ile	Gly	Val	450	455	460
Ser	Ala	Leu	Ala	Leu	Leu	Ala	Leu	Met	Ile	Phe	Ile	Ala	Ala	Cys	Cys	465	470	475
Lys	Arg	Val	Lys	His	Lys	Lys	Arg	Ala	Lys	Pro	Asn	Pro	Val	Glu	Leu	485	490	495
Ile	Arg	Lys	Val	Ser	Val	Thr	Ser	Gln	Ser	Gly	Arg	Pro	Ile	Pro	Ser	500	505	510
Trp	Glu	Ser	Tyr	Lys	Val	Glu	Thr	Gly	Gly	Gln	Ser					515	520	

<210> 30

<211> 524

<212> PRT

<213> Lyssavirus sp.

<220>

<223> EBL2HOL

<400> 30

Met	Pro	Phe	Gln	Ala	Val	Leu	Ser	Ala	Leu	Leu	Ser	Ala	Leu	Thr	Leu	1	5	10	15
Cys	Val	Gly	Lys	Phe	Pro	Ile	Tyr	Thr	Ile	Pro	Asp	Lys	Leu	Gly	Pro	20	25	30	
Trp	Ser	Pro	Ile	Asp	Ile	His	His	Leu	Ser	Cys	Pro	Thr	Asn	Met	Val	35	40	45	
Val	Glu	Asp	Glu	Gly	Cys	Thr	Thr	Leu	Thr	Val	Phe	Ser	Tyr	Met	Glu	50	55	60	
Leu	Lys	Val	Gly	Tyr	Ile	Thr	Thr	Ile	Lys	Val	Asn	Glu	Phe	Thr	Cys	65	70	75	80
Thr	Gly	Val	Val	Thr	Glu	Ala	Glu	Thr	Tyr	Thr	Asn	Phe	Val	Gly	Tyr	85	90	95	
Val	Thr	Thr	Thr	Phe	Lys	Arg	Lys	Asp	Phe	Arg	Pro	Ser	Pro	Ser	Ala	100	105	110	
Cys	Arg	Asp	Ala	Tyr	Ser	Cys	Lys	Thr	Ala	Gly	Asp	Pro	Arg	Tyr	Glu	115	120	125	
Glu	Ser	Leu	His	Asn	Pro	Tyr	Pro	Asp	Ser	His	Trp	Leu	Thr	Cys	Thr	130	135	140	
Thr	Thr	Thr	Lys	Glu	Ser	Val	Leu	Ile	Ile	Ser	Pro	Ser	Val	Ala	Asp	145	150	155	160
Met	Asp	Ala	Tyr	Asp	Lys	Thr	Leu	Tyr	Ser	Lys	Ile	Phe	Leu	Asn	Gly	165	170	175	
Lys	Cys	Ser	Gly	Val	Ser	Gln	Val	Ser	Pro	Phe	Cys	Ser	Thr	Asn	His	180	185	190	
Asp	Tyr	Thr	Ile	Trp	Met	Pro	Glu	Asn	Pro	Asn	Pro	Gly	Val	Ser	Cys	195	200	205	
Asp	Ile	Phe	Thr	Thr	Ser	Lys	Gly	Lys	Lys	Ala	Thr	Lys	Asp	Gly	Lys	210	215	220	
Leu	Cys	Gly	Phe	Val	Asp	Glu	Arg	Gly	Leu	Tyr	Lys	Ser	Leu	Lys	Gly	225	230	235	240
Ala	Cys	Lys	Leu	Lys	Leu	Cys	Gly	Ile	Ser	Gly	Met	Arg	Leu	Met	Asp	245	250	255	
Gly	Ser	Trp	Val	Ser	Ile	Gln	Asn	His	Asp	Glu	Ala	Lys	Trp	Cys	Ser	260	265	270	
Pro	Asp	Gln	Leu	Val	Asn	Ile	His	Asp	Phe	His	Ser	Asp	Glu	Val	Glu	275	280	285	

His Leu Ile Ala Glu Glu Leu Val Lys Lys Arg Glu Glu Cys Leu Asp
 290 295 300
 Ala Leu Glu Ser Ile Met Thr Thr Lys Ser Ile Ser Phe Arg Arg Leu
 305 310 315 320
 Ser His Leu Arg Lys Leu Val Pro Gly Phe Gly Lys Ala Tyr Thr Val
 325 330 335
 Ile Asn Lys Thr Leu Met Glu Ala Asp Ala His Tyr Lys Ser Ile Arg
 340 345 350
 Glu Trp Thr Asp Val Ile Pro Ser Lys Gly Cys Leu Met Ala Gly Gly
 355 360 365
 Arg Cys Tyr Pro His His Asn Gly Val Phe Phe Asn Gly Ile Ile Leu
 370 375 380
 Ser Pro Asp Gly His Val Leu Ile Pro Glu Met Gln Ser Ala Met Leu
 385 390 395 400
 Gln Gln His Ile Glu Leu Leu Glu Ser Ser Val Ile Pro Leu Met His
 405 410 415
 Pro Leu Ala Asp Pro Ser Thr Ile Phe Lys Lys Asp Asp Gly Ala Glu
 420 425 430
 Asp Phe Val Glu Val His Leu Pro Asp Val Gln Lys Gln Ile Ser Gly
 435 440 445
 Ile Asp Leu Gly Leu Pro Glu Trp Lys Arg Tyr Phe Leu Ile Gly Val
 450 455 460
 Ser Ala Leu Ala Phe Leu Ala Leu Met Ile Phe Ile Ala Ala Cys Cys
 465 470 475 480
 Arg Arg Val Lys Arg Lys Lys Arg Ala Lys Pro Asn Pro Val Glu Leu
 485 490 495
 Ile Arg Lys Val Ser Val Thr Ser Gln Ser Gly Arg Pro Ile Pro Ser
 500 505 510
 Trp Glu Ser Tyr Lys Val Glu Thr Gly Gly Gln Ser
 515 520

<210> 31

<211> 533

<212> PRT

<213> Lyssavirus sp.

<220>

<223> Duv1SAF

<400> 31

Met Pro Leu Asn Ala Val Ile Phe Thr Leu Leu Leu Arg Cys Ser Ile
 1 5 10 15

Cys Leu Gly Lys Phe Pro Phe Tyr Thr Ile Pro Asp Lys Leu Gly Pro
 20 25 30

Trp Ser Pro Ile Asp Ile His His Leu Ser Cys Pro Asn Asn Leu Val
 35 40 45

Val Glu Asp Glu Gly Cys Thr Thr Leu Thr Pro Phe Ser Tyr Met Glu
 50 55 60

Leu Lys Val Gly Tyr Ile Thr Ser Ile Lys Val Ser Gly Phe Thr Cys
 65 70 75 80

Thr Gly Val Val Thr Glu Ala Glu Thr Tyr Thr Asn Phe Val Gly Tyr
 85 90 95

Val Thr Thr Thr Phe Arg Arg Arg His Phe Arg Pro Ser Val Asn Ser
 100 105 110

Cys Arg Asp Ala Tyr Asn Trp Lys Ile Ala Gly Asp Pro Arg Tyr Glu
 115 120 125

Glu Ser Leu His Asn Pro Tyr Pro Asp Ser His Trp Leu Arg Thr Val
 130 135 140

Lys Thr Thr Lys Glu Ser Leu Leu Ile Ile Ser Pro Ser Val Ala Asp
 145 150 155 160

Met Asp Ala Tyr Asp Lys Lys Leu Tyr Ser Lys Met Phe Pro Asn Gly
 165 170 175

Arg Cys Ser Glu Ile Ser Pro Gly Ser Pro Phe Cys Pro Thr Asn His
 180 185 190

Glu Tyr Thr Ile Trp Met Pro Glu Ser Ser Asn Pro Gly Ile Ser Cys
 195 200 205

Asp Ile Phe Thr Arg Ser Met Gly Lys Lys Ala Thr Lys Asp Gly Gln
 210 215 220

Leu Cys Gly Phe Val Asp Glu Arg Gly Leu Tyr Lys Ser Leu Lys Gly
 225 230 235 240

Ala Cys Arg Leu Arg Leu Cys Gly Ile Ser Gly Leu Arg Leu Met Asp
 245 250 255

Gly Ser Trp Val Ser Leu Pro Gln Val Asn Asn Ser Glu Trp Cys Ser
 260 265 270

Pro Asp Gln Leu Val Asn Ile His Asp Phe His Ser Asp Glu Ile Glu
 275 280 285

His Leu Val Ala Asp Glu Leu Val Lys Lys Arg Glu Asp Cys Leu Asp
 290 295 300

Ala Leu Glu Thr Ile Ile Phe Thr Lys Ser Ile Ser Phe Arg Arg Leu
 305 310 315 320

Ser Arg Leu Arg Lys Leu Val Pro Gly Phe Gly Lys Ala Tyr Thr Ile
 325 330 335
 Ile Asn Arg Thr Leu Met Glu Ala Glu Ala His Tyr Lys Ser Val Arg
 340 345 350
 Glu Trp Lys Glu Ile Ile Pro Ser Lys Gly Cys Leu Lys Ala Gly Gly
 355 360 365
 Arg Cys Tyr Pro His His Asn Ile Val Phe Phe Asn Gly Ile Ile Leu
 370 375 380
 Gly Pro Gly Gly Lys Ile Leu Ile Pro Glu Met Gln Ser Ala Leu Leu
 385 390 395 400
 Gln Gln His Ile Glu Leu Leu Glu Ser Ser Val Val Pro Leu Lys His
 405 410 415
 Pro Leu Ala Asp Pro Ser Thr Val Phe Lys Asn Asp Asp Glu Ala Glu
 420 425 430
 Ser Phe Val Asp Val His Leu Pro Asp Thr Asn Gln Lys Ile Ser Gly
 435 440 445
 Ile Asp Leu Gly Leu Pro Glu Trp Lys Arg Tyr Phe Leu Ile Gly Val
 450 455 460
 Ser Ala Val Ala Leu Leu Ala Leu Ser Ile Ile Met Arg Val Cys Cys
 465 470 475 480
 Lys Arg Phe Lys Asn Arg Arg Lys Ser Lys Pro Ser Pro Val Glu Leu
 485 490 495
 Thr Arg Lys Val Ser Val Ile Ser Lys Gly Asn Gly Pro Val Pro Ser
 500 505 510
 Trp Glu Ser Tyr Lys Glu Gly Thr Thr Gly Asp Val Arg Asn Thr Thr
 515 520 525
 Pro Ser Thr Arg Glu
 530

<210> 32
 <211> 533
 <212> PRT
 <213> Lyssavirus sp.

<220>
 <223> Duv2SAF

<400> 32
 Met Pro Leu Asn Ala Val Ile Phe Thr Leu Leu Leu Arg Cys Ser Ile
 1 5 10 15
 Cys Leu Gly Lys Phe Pro Phe Tyr Thr Ile Pro Asp Lys Leu Gly Pro
 20 25 30

Trp Ser Pro Ile Asp Ile His His Leu Ser Cys Pro Asn Asn Leu Val
 35 40 45

Val Glu Asp Glu Gly Cys Thr Thr Leu Thr Pro Phe Ser Tyr Met Glu
 50 55 60

Leu Lys Val Gly Tyr Ile Thr Ser Ile Lys Val Ser Gly Phe Thr Cys
 65 70 75 80

Thr Gly Val Val Thr Glu Ala Glu Thr Tyr Thr Asn Phe Val Gly Tyr
 85 90 95

Val Thr Thr Thr Phe Arg Arg Arg His Phe Arg Pro Ser Val Asn Ser
 100 105 110

Cys Arg Asp Ala Tyr Asn Trp Lys Ile Ala Gly Asp Pro Arg Tyr Glu
 115 120 125

Glu Ser Leu His Asn Pro Tyr Pro Asp Ser His Trp Leu Arg Thr Val
 130 135 140

Lys Thr Thr Lys Glu Ser Leu Leu Ile Ile Ser Pro Ser Val Ala Asp
 145 150 155 160

Met Asp Ala Tyr Asp Lys Lys Leu Tyr Ser Lys Met Phe Pro Asn Gly
 165 170 175

Arg Cys Ser Glu Ile Ser Pro Gly Ser Pro Phe Cys Pro Thr Asn His
 180 185 190

Glu Tyr Thr Ile Trp Met Pro Glu Ser Ser Asn Pro Gly Ile Ser Cys
 195 200 205

Asp Ile Phe Thr Arg Ser Met Gly Lys Lys Ala Thr Lys Asp Gly Gln
 210 215 220

Leu Cys Gly Phe Val Asp Glu Arg Gly Leu Tyr Lys Ser Leu Lys Gly
 225 230 235 240

Ala Cys Arg Leu Arg Leu Cys Gly Ile Ser Gly Leu Arg Leu Met Asp
 245 250 255

Gly Ser Trp Val Ser Leu Pro Gln Val Asn Asn Ser Glu Trp Cys Ser
 260 265 270

Pro Asp Gln Leu Val Asn Ile His Asp Phe His Ser Asp Glu Ile Glu
 275 280 285

His Leu Val Ala Asp Glu Leu Val Lys Lys Arg Glu Asp Cys Leu Asp
 290 295 300

Ala Leu Glu Thr Ile Leu Phe Thr Lys Ser Ile Ser Phe Arg Arg Leu
 305 310 315 320

Ser His Leu Arg Lys Leu Val Pro Gly Phe Gly Lys Ala Tyr Thr Ile
 325 330 335

Ile Asn Arg Thr Leu Met Glu Ala Glu Ala His Tyr Lys Ser Val Arg
 340 345 350
 Glu Trp Lys Glu Ile Ile Pro Ser Lys Gly Cys Leu Lys Ala Gly Gly
 355 360 365
 Arg Cys Tyr Pro His His Asn Gly Ile Phe Phe Asn Gly Ile Ile Leu
 370 375 380
 Gly Pro Gly Gly Glu Ile Leu Ile Pro Glu Met Gln Ser Ala Leu Leu
 385 390 395 400
 Gln Gln His Ile Glu Leu Leu Glu Ser Ser Val Val Pro Leu Lys His
 405 410 415
 Pro Leu Ala Asp Pro Ser Thr Val Phe Lys Asn Asp Asp Glu Ala Glu
 420 425 430
 Ser Phe Val Asp Val His Leu Pro Asp Thr Asn Gln Lys Ile Ser Gly
 435 440 445
 Ile Asp Leu Gly Leu Pro Glu Trp Lys Arg Tyr Phe Leu Ile Gly Val
 450 455 460
 Ser Ala Val Ala Leu Leu Ala Leu Ser Ile Ile Ile Ala Val Cys Cys
 465 470 475 480
 Lys Arg Phe Arg Lys Arg Lys Lys Ser Lys Pro Gly Pro Val Glu Leu
 485 490 495
 Thr Arg Lys Val Ser Val Ile Ser Lys Gly Asn Gly Pro Val Pro Ser
 500 505 510
 Trp Glu Ser Tyr Lys Glu Gly Thr Thr Gly Asp Val Arg Asn Thr Thr
 515 520 525
 Pro Ser Thr Arg Glu
 530

<210> 33
 <211> 522
 <212> PRT
 <213> Lyssavirus sp.

<220>
 <223> Lag1NGA

<400> 33
 Met Ser Gln Leu Asn Leu Ile Leu Phe Phe Cys Val Ile Ile Val Leu
 1 5 10 15
 Ser Val Glu Asp Phe Pro Leu Tyr Thr Ile Pro Glu Lys Ile Gly Pro
 20 25 30
 Trp Thr Pro Ile Asp Leu Ile His Leu Ser Cys Pro Asn Asn Leu Gln
 35 40 45

Ser Glu Asp Glu Gly Cys Gly Thr Ser Ser Ser Val Ser Tyr Val Glu
 50 55 60

Leu Lys Thr Gly Tyr Leu Thr His Gln Lys Val Ser Gly Phe Thr Cys
 65 70 75 80

Thr Gly Val Val Asn Glu Ala Val Thr Tyr Thr Asn Phe Val Gly Tyr
 85 90 95

Val Thr Thr Thr Phe Lys Arg Lys His Phe Lys Pro Thr Ala Leu Ala
 100 105 110

Cys Arg Asp Ala Tyr His Trp Lys Ile Ser Gly Asp Pro Arg Tyr Glu
 115 120 125

Glu Ser Leu His Thr Pro Tyr Pro Asp Asn Ser Trp Leu Arg Thr Val
 130 135 140

Thr Thr Thr Lys Glu Ser Leu Val Ile Ile Ser Pro Ser Ile Val Glu
 145 150 155 160

Met Asp Val Tyr Ser Arg Thr Leu His Ser Pro Met Phe Pro Thr Gly
 165 170 175

Thr Cys Ser Arg Phe Tyr Pro Ser Ser Pro Ser Cys Ala Thr Asn His
 180 185 190

Asp Tyr Thr Leu Trp Leu Pro Asp Asp Pro Asn Leu Ser Leu Ala Cys
 195 200 205

Asp Ile Phe Val Thr Ser Thr Gly Lys Lys Ser Met Asn Gly Ser Arg
 210 215 220

Met Cys Gly Phe Thr Asp Glu Arg Gly Tyr Tyr Arg Thr Ile Lys Gly
 225 230 235 240

Ala Cys Lys Leu Thr Leu Cys Gly Lys Pro Gly Leu Arg Leu Phe Asp
 245 250 255

Gly Thr Trp Ile Ser Phe Thr Arg Pro Glu Val Thr Thr Trp Cys Leu
 260 265 270

Pro Asn Gln Leu Val Asn Ile His Asn Asn Arg Ile Asp Glu Val Glu
 275 280 285

His Leu Ile Val Glu Asp Leu Ile Arg Lys Arg Glu Glu Cys Leu Asp
 290 295 300

Thr Leu Glu Thr Val Leu Met Ser Lys Ser Ile Ser Phe Arg Arg Val
 305 310 315 320

Ser His Phe Arg Lys Leu Val Pro Gly Tyr Gly Lys Ala Tyr Thr Ile
 325 330 335

Leu Asn Gly Ser Leu Ile Gln Thr Asn Val His Tyr Leu Lys Val Asp
 340 345 350

Asn Trp Ser Glu Ile Leu Pro Ser Lys Gly Cys Leu Lys Ile Asn Asn
 355 360 365
 Gln Cys Val Ala His Asp Glu Gly Val Phe Phe Asn Gly Ile Ile Lys
 370 375 380
 Gly Pro Asp Gly His Ile Leu Ile Pro Glu Met Gln Ser Ser Leu Trp
 385 390 395 400
 Lys Gln His Met Asp Leu Phe Lys Ala Ala Val Phe Pro Leu Arg His
 405 410 415
 Pro Leu Ile Glu Pro Gly Ser Leu Phe Asn Lys Asp Gly Asp Ala Asp
 420 425 430
 Glu Phe Val Asp Val His Met Pro Asp Val His Lys Leu Val Ser Asp
 435 440 445
 Val Asp Leu Gly Leu Pro Asp Trp Ser Leu Tyr Ala Leu Ile Gly Ala
 450 455 460
 Thr Ile Ile Ala Phe Phe Ile Leu Ile Cys Leu Ile Arg Ile Cys Cys
 465 470 475 480
 Lys Lys Arg Gly Arg Arg Asn Ser Pro Thr Asn Arg Pro Asp Leu Pro
 485 490 495
 Ile Gly Leu Ser Thr Thr Pro Gln Pro Lys Ser Lys Val Ile Ser Ser
 500 505 510
 Trp Glu Ser Tyr Lys Gly Thr Ser Asn Val
 515 520

<210> 34
 <211> 522
 <212> PRT
 <213> Lyssavirus sp.

<220>
 <223> Lag2CAR

<400> 34
 Met Ser Gln Leu Ile Leu Ile Pro Phe Leu Cys Val Val Ile Val Ile
 1 5 10 15
 Ser Val Gly Asp Phe Pro Leu Tyr Thr Ile Pro Glu Lys Ile Gly Thr
 20 25 30
 Trp Thr Pro Ile Asp Leu Ile His Leu Ser Cys Pro Asn Asn Leu Leu
 35 40 45
 Ser Glu Asp Asp Gly Cys Ser Asn Thr Ala Thr Phe Asn Tyr Ile Glu
 50 55 60
 Leu Lys Thr Gly Tyr Leu Thr His Gln Lys Val Ser Gly Phe Thr Cys
 65 70 75 80

Thr	Gly	Val	Val	Asn	Glu	Ala	Val	Thr	Tyr	Thr	Asn	Phe	Val	Gly	Tyr		
				85					90					95			
Val	Thr	Thr	Thr	Phe	Lys	Arg	Lys	His	Phe	Lys	Pro	Thr	Ala	Leu	Ala		
			100					105					110				
Cys	Arg	Asp	Ala	Phe	His	Trp	Lys	Ile	Ser	Gly	Asp	Pro	Arg	Tyr	Glu		
		115					120				125						
Glu	Ser	Leu	His	Thr	Pro	Tyr	Pro	Asp	Asn	Ser	Trp	Leu	Arg	Thr	Val		
	130					135					140						
Thr	Thr	Thr	Lys	Glu	Ser	Leu	Leu	Ile	Ile	Ser	Pro	Ser	Ile	Val	Glu		
145					150					155					160		
Met	Asp	Val	Tyr	Ser	Arg	Thr	Leu	His	Ser	Pro	Met	Phe	Pro	Gly	Gly		
				165					170					175			
Val	Cys	Ser	Lys	Phe	Tyr	Pro	Ser	Ser	Pro	Ser	Cys	Pro	Thr	Asn	His		
			180					185					190				
Asp	Tyr	Thr	Leu	Trp	Leu	Pro	Glu	Asp	Ala	Asn	Leu	Ser	Met	Ala	Cys		
		195					200					205					
Asp	Ile	Phe	Ile	Thr	Ser	Thr	Gly	Lys	Lys	Ser	Met	Asn	Gly	Ser	Arg		
	210					215					220						
Met	Cys	Gly	Phe	Thr	Asp	Glu	Arg	Gly	Phe	Tyr	Arg	Thr	Leu	Lys	Gly		
225					230				235						240		
Ala	Cys	Lys	Leu	Thr	Leu	Cys	Gly	Lys	Pro	Gly	Leu	Arg	Leu	Tyr	Asp		
				245					250					255			
Gly	Thr	Trp	Val	Ser	Phe	Thr	Arg	Pro	Glu	Ile	Asn	Val	Trp	Cys	Ser		
			260					265					270				
Pro	Asn	Gln	Leu	Val	Asn	Val	His	Asn	Asn	Arg	Leu	Asp	Glu	Ile	Glu		
		275					280					285					
His	Leu	Ile	Val	Gly	Asp	Leu	Ile	Arg	Lys	Arg	Glu	Glu	Cys	Leu	Asp		
	290					295					300						
Thr	Leu	Glu	Thr	Ile	Leu	Met	Ser	Lys	Ser	Ile	Ser	Phe	Arg	Arg	Leu		
305					310					315					320		
Ser	His	Phe	Arg	Lys	Leu	Val	Pro	Gly	Tyr	Gly	Lys	Ala	Tyr	Thr	Ile		
				325					330					335			
Ile	Asn	Gly	Ser	Leu	Met	Glu	Thr	Asn	Val	His	Tyr	Leu	Arg	Val	Asp		
		340						345					350				
Ser	Trp	Asn	Asp	Ile	Leu	Pro	Ser	Lys	Gly	Cys	Leu	Lys	Met	Asn	Lys		
		355					360					365					
Gln	Cys	Val	Asp	Ser	Tyr	Arg	Gly	Val	Phe	Phe	Asn	Gly	Ile	Ile	Lys		
	370					375					380						

Gly His Asp Gly His Ile Leu Ile Pro Glu Met Gln Ser Ser Leu Leu
385 390 395 400

Lys Gln His Met Asp Leu Leu Lys Ala Ala Val Phe Pro Leu Arg His
405 410 415

Pro Leu Ile Asp Gln Asn Ser Leu Phe Lys Lys Asp Gly Asp Ala Asp
420 425 430

Asp Phe Val Glu Val His Met Pro Asp Ile Gln Lys Leu Ile Ser Asp
435 440 445

Val Asp Leu Gly Leu Pro Ser Trp Gly Leu Tyr Val Met Ile Gly Ala
450 455 460

Ala Val Ile Ala Phe Leu Val Leu Ile Cys Leu Ile Arg Ile Cys Cys
465 470 475 480

Lys Lys Lys Thr Arg Thr Arg Thr Ser Met Glu Arg Pro Asp Pro Pro
485 490 495

Ile Ser Leu Ser Thr Thr Pro Gln Ser Arg Ala Lys Val Val Ser Ser
500 505 510

Trp Glu Ser Tyr Lys Gly Ser Ser Asn Val
515 520

<210> 35

<211> 523

<212> PRT

<213> Lyssavirus sp.

<220>

<223> Mok3ETP

<400> 35

Met Asn Ile Pro Cys Phe Ala Val Ile Leu Ser Leu Ala Thr Thr His
1 5 10 15

Cys Leu Glu Lys Phe Leu Ile Tyr Thr Ile Pro Glu Lys Ile Glu Lys
20 25 30

Trp Thr Pro Ile Asp Met Ile His Leu Ser Cys Pro Asn Asn Met Leu
35 40 45

Ser Glu Glu Glu Gly Cys Asn Thr Glu Ser Pro Phe Thr Tyr Phe Glu
50 55 60

Leu Lys Ser Gly Tyr Leu Ala His Gln Lys Val Pro Gly Phe Thr Cys
65 70 75 80

Thr Gly Val Val Asn Glu Ala Glu Thr Tyr Thr Asn Phe Val Gly Tyr
85 90 95

Val Thr Thr Thr Phe Lys Arg Lys His Phe Lys Pro Thr Val Ala Ala
100 105 110

Cys Arg Asp Ala Tyr Asn Trp Lys Val Ser Gly Asp Pro Arg Tyr Glu
 115 120 125

Glu Ser Leu His Thr Pro Tyr Pro Asp Ser Ser Trp Leu Arg Thr Val
 130 135 140

Thr Thr Thr Lys Glu Ala Leu Leu Ile Ile Ser Pro Ile Val Glu Asp
 145 150 155 160

Met Ile Ala Gly Arg Lys Thr Leu His Ser Pro Met Phe Pro Ser Gly
 165 170 175

Lys Cys Ser Lys Leu Tyr Pro Ser Val Pro Ser Cys Thr Thr Asn His
 180 185 190

Asp Tyr Thr Leu Trp Leu Pro Glu Asp Ser Ser Leu Ser Leu Ile Cys
 195 200 205

Asp Ile Phe Thr Ser Ser Ser Gly Gln Lys Ala Met Asn Gly Ser Arg
 210 215 220

Ile Cys Gly Phe Lys Asp Glu Arg Gly Phe Tyr Arg Ser Leu Lys Gly
 225 230 235 240

Ser Cys Lys Leu Thr Leu Cys Gly Lys Pro Gly Ile Arg Leu Phe Asp
 245 250 255

Gly Thr Trp Val Ser Phe Thr Lys Pro Asp Val His Val Trp Cys Thr
 260 265 270

Pro Asn Gln Leu Val Asn Ile His Asn Asp Arg Leu Asp Glu Val Glu
 275 280 285

His Leu Ile Val Asp Asp Ile Ile Lys Lys Arg Glu Glu Cys Leu Asp
 290 295 300

Thr Leu Glu Thr Ile Leu Met Ser Gln Ser Val Ser Phe Arg Arg Leu
 305 310 315 320

Ser His Phe Arg Lys Leu Val Pro Gly Tyr Gly Lys Ala Tyr Thr Ile
 325 330 335

Leu Asn Gly Ser Leu Met Glu Thr Asn Val Tyr Tyr Lys Arg Val Asp
 340 345 350

Arg Trp Ala Asp Ile Leu Pro Ser Arg Gly Cys Leu Lys Val Gly Gln
 355 360 365

Gln Cys Met Asp Pro Val Lys Asn Leu Val Phe Phe Asn Gly Ile Ile
 370 375 380

Lys Gly Pro Asp Gly Gln Ile Leu Ile Pro Glu Met Gln Ser Glu Gln
 385 390 395 400

Leu Lys Gln His Met Asp Leu Leu Lys Ala Ala Met Phe Pro Leu Arg
 405 410 415

His Pro Leu Ile Asn Arg Glu Ala Val Phe Lys Lys Asp Gly Asn Ala
 420 425 430

Asp Asp Phe Val Asp Leu His Met Pro Asp Val Gln Lys Ser Val Ser
 435 440 445

Asp Val Asp Leu Gly Leu Pro His Trp Gly Phe Trp Leu Leu Val Gly
 450 455 460

Ala Thr Val Val Ala Phe Val Val Leu Ala Cys Leu Leu Arg Val Cys
 465 470 475 480

Cys Arg Arg Met Arg Arg Arg Arg Ser Leu Arg Ala Thr Gln Asp Ile
 485 490 495

Pro Leu Ser Val Ala Pro Ala Pro Val Pro Arg Ala Lys Val Val Ser
 500 505 510

Ser Trp Glu Ser Ser Lys Gly Leu Pro Gly Thr
 515 520

<210> 36

<211> 523

<212> PRT

<213> Lyssavirus sp.

<220>

<223> Mok2ZIM

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 1 5 10 15

Ser Leu Gly Glu Phe Pro Leu Tyr Thr Ile Pro Glu Lys Ile Glu Lys
 20 25 30

Trp Thr Pro Ile Asp Met Ile His Leu Ser Cys Pro Asn Asn Leu Leu
 35 40 45

Ser Glu Glu Glu Gly Cys Asn Ala Glu Ser Ser Phe Thr Tyr Phe Glu
 50 55 60

Leu Lys Ser Gly Tyr Leu Ala His Gln Lys Val Pro Gly Phe Thr Cys
 65 70 75 80

Thr Gly Val Val Asn Glu Ala Glu Thr Tyr Thr Asn Phe Val Gly Tyr
 85 90 95

Val Thr Thr Thr Phe Lys Arg Lys His Phe Arg Pro Thr Val Ala Ala
 100 105 110

Cys Arg Asp Ala Tyr Asn Trp Lys Val Ser Gly Asp Pro Arg Tyr Glu
 115 120 125

Glu Ser Leu His Thr Pro Tyr Pro Asp Ser Ser Trp Leu Arg Thr Val
 130 135 140

Thr Thr Thr Lys Glu Ser Leu Leu Ile Ile Ser Pro Ser Ile Val Glu
 145 150 155 160

Met Asp Ile Tyr Gly Arg Thr Leu His Ser Pro Met Phe Pro Ser Gly
 165 170 175

Val Cys Ser Asn Val Tyr Pro Ser Val Pro Ser Cys Glu Thr Asn His
 180 185 190

Asp Tyr Thr Leu Trp Leu Pro Glu Asp Pro Ser Leu Ser Leu Val Cys
 195 200 205

Asp Ile Phe Thr Ser Ser Asn Gly Lys Lys Ala Met Asn Gly Ser Arg
 210 215 220

Ile Cys Gly Phe Lys Asp Glu Arg Gly Phe Tyr Arg Ser Leu Lys Gly
 225 230 235 240

Ala Cys Lys Leu Thr Leu Cys Gly Arg Pro Gly Ile Arg Leu Phe Asp
 245 250 255

Gly Thr Trp Val Ser Phe Thr Lys Pro Asp Val His Val Lys Thr Cys
 260 265 270

Asn Pro Asp Ile Leu Val Asn Ile His Asn Asp Arg Leu Asp Glu Ile
 275 280 285

Glu His Leu Ile Val Glu Asp Ile Ile Lys Lys Arg Glu Glu Cys Leu
 290 295 300

Asp Thr Leu Glu Thr Ile Leu Met Ser Gln Ser Val Ser Phe Arg Arg
 305 310 315 320

Leu Ser His Phe Arg Lys Leu Val Pro Gly Tyr Gly Lys Ala Tyr Thr
 325 330 335

Ile Leu Asn Gly Ser Leu Met Glu Thr Asn Val Tyr Tyr Lys Arg Val
 340 345 350

Asp Lys Trp Ala Asp Ile Leu Pro Ser Lys Gly Cys Leu Lys Val Gly
 355 360 365

Gln Gln Cys Met Glu Pro Val Lys Gly Val Leu Phe Asn Gly Ile Ile
 370 375 380

Lys Gly Pro Asp Gly Gln Ile Leu Ile Pro Glu Met Gln Ser Glu Gln
 385 390 395 400

Leu Lys Gln His Met Asp Leu Leu Lys Ala Ala Val Phe Pro Leu Arg
 405 410 415

His Pro Leu Ile Ser Arg Glu Ala Val Phe Lys Lys Asp Gly Asp Ala
 420 425 430

Asp Asp Phe Val Asp Leu His Met Pro Asp Val His Lys Ser Val Ser
 435 440 445

Asp Val Asp Leu Gly Leu Pro His Trp Gly Phe Trp Met Leu Ile Gly
 450 455 460

Ala Thr Ile Val Ala Phe Val Val Leu Val Cys Leu Leu Arg Val Cys
 465 470 475 480

Cys Lys Arg Val Arg Arg Arg Arg Ser Gly Arg Ala Thr Gln Glu Ile
 485 490 495

Pro Leu Ser Phe Pro Ser Ala Pro Val Pro Arg Ala Lys Val Val Ser
 500 505 510

Ser Trp Glu Ser Tyr Lys Gly Leu Pro Gly Thr
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<210> 37

<211> 129

<212> PRT

<213> Lyssavirus sp.

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<223> Lag3SAF

<400> 37

Cys Leu Asp Thr Leu Glu Thr Ile Leu Met Ser Lys Ser Ile Ser Phe
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Arg Arg Leu Ser His Phe Arg Lys Leu Val Pro Gly Tyr Gly Lys Ala
 20 25 30

Tyr Thr Ile Ile Asn Gly Ser Leu Met Glu Thr Asn Val His Tyr Leu
 35 40 45

Arg Val Asp Ser Trp Asn Asp Ile Leu Pro Ser Lys Gly Cys Leu Lys
 50 55 60

Met Asn Lys Gln Cys Val Asp Ser Tyr Arg Gly Val Phe Phe Asn Gly
 65 70 75 80

Ile Ile Lys Gly Leu Asp Gly His Ile Leu Ile Pro Glu Met Gln Ser
 85 90 95

Ser Leu Leu Lys Gln His Met Asp Leu Leu Lys Ala Ala Val Phe Pro
 100 105 110

Leu Arg His Pro Leu Ile Asp Gln Asn Ser Leu Phe Lys Lys Asp Gly
 115 120 125

Asp

<210> 38

<211> 129

<212> PRT

<213> Lyssavirus sp.

<220>

<223> Lag4SAF

<400> 38

Cys Leu Asp Thr Leu Glu Thr Ile Leu Met Ser Lys Ser Ile Ser Phe
 1 5 10 15

Arg Arg Leu Ser His Phe Arg Lys Leu Val Pro Gly Tyr Gly Lys Ala
 20 25 30

Tyr Thr Ile Ile Asn Gly Ser Leu Met Glu Thr Asn Val His Tyr Leu
 35 40 45

Arg Val Asp Ser Trp Asn Asp Ile Leu Pro Ser Lys Gly Cys Leu Lys
 50 55 60

Met Asn Lys Gln Cys Val Asp Ser Tyr Arg Gly Val Phe Phe Asn Gly
 65 70 75 80

Ile Ile Lys Gly Leu Asp Gly His Ile Leu Ile Pro Glu Met Gln Ser
 85 90 95

Ser Leu Leu Lys Gln His Met Asp Leu Leu Lys Ala Ala Val Phe Pro
 100 105 110

Leu Arg His Pro Leu Ile Asp Gln Asn Ser Leu Phe Lys Lys Asp Gly
 115 120 125

Asp

<210> 39

<211> 129

<212> PRT

<213> Lyssavirus sp.

<220>

<223> Mok1SAF

<400> 39

Cys Leu Asp Thr Leu Glu Thr Val Phe Met Ser Gln Ser Val Ser Phe
 1 5 10 15

Arg Arg Leu Ser His Phe Arg Lys Leu Val Pro Gly Tyr Gly Lys Ala
 20 25 30

Tyr Thr Ile Leu Asn Gly Ser Leu Met Glu Ala Asn Val Tyr Tyr Lys
 35 40 45

Arg Val Asp Arg Trp Ala Asp Ile Leu Pro Ser Lys Gly Cys Leu Lys
 50 55 60

Val Gly Gln Gln Cys Met Asp Pro Val Asn Gly Val Leu Phe Asn Gly
 65 70 75 80

Ile Ile Lys Gly Pro Asp Gly Gln Ile Leu Ile Pro Glu Met Gln Ser
 85 90 95

Glu Gln Leu Lys Gln His Met Asp Leu Leu Lys Ala Ala Val Phe Pro
 100 105 110

Leu Arg His Pro Leu Ile Ser Gln Glu Ala Val Phe Lys Lys Asp Gly
 115 120 125

Asp

<210> 40
 <211> 522
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Met Xaa Leu Gln Ala Val Ile Phe Xaa Leu Leu Xaa Xaa Xaa Leu

1

5

10

15

Cys Leu Gly Lys Phe Pro Ile Tyr Thr Ile Pro Asp Lys Leu Gly Pro

20

25

30

Trp Ser Pro Ile Asp Ile His His Leu Ser Cys Pro Asn Asn Leu Val
 35 40 45
 Val Glu Asp Glu Gly Cys Thr Thr Leu Xaa Pro Phe Ser Tyr Met Glu
 50 55 60
 Leu Lys Val Gly Tyr Ile Thr Thr Ile Lys Val Ser Gly Phe Thr Cys
 65 70 75 80
 Thr Gly Val Val Thr Glu Ala Glu Thr Tyr Thr Asn Phe Val Gly Tyr
 85 90 95
 Val Thr Thr Thr Phe Lys Arg Lys His Phe Arg Pro Thr Val Xaa Ala
 100 105 110
 Cys Arg Asp Ala Tyr Asn Trp Lys Ile Ala Gly Asp Pro Arg Tyr Glu
 115 120 125
 Glu Ser Leu His Asn Pro Tyr Pro Asp Ser His Trp Leu Arg Thr Val
 130 135 140
 Thr Thr Thr Lys Glu Ser Leu Leu Ile Ile Ser Pro Ser Val Val Asp
 145 150 155 160
 Met Asp Ala Tyr Asp Lys Thr Leu His Ser Lys Met Phe Pro Asn Gly
 165 170 175
 Lys Cys Ser Gly Xaa Ser Pro Ser Ser Pro Phe Cys Xaa Thr Asn His
 180 185 190
 Asp Tyr Thr Ile Trp Met Pro Glu Asn Pro Asn Pro Gly Leu Ser Cys
 195 200 205
 Asp Ile Phe Thr Thr Ser Lys Gly Lys Lys Ala Thr Lys Gly Gly Arg
 210 215 220
 Leu Cys Gly Phe Val Asp Glu Arg Gly Leu Tyr Lys Ser Leu Lys Gly
 225 230 235 240
 Ala Cys Lys Leu Lys Leu Cys Gly Ile Pro Gly Leu Arg Leu Met Asp
 245 250 255
 Gly Ser Trp Val Ser Xaa Gln Xaa Xaa Glu Xaa Xaa Lys Trp Cys Ser
 260 265 270
 Pro Asp Gln Leu Val Asn Ile His Asp Phe His Ser Asp Glu Ile Glu
 275 280 285
 His Leu Ile Val Glu Glu Leu Val Lys Lys Arg Glu Glu Cys Leu Asp
 290 295 300
 Ala Leu Glu Thr Ile Xaa Thr Thr Lys Ser Ile Ser Phe Arg Arg Leu
 305 310 315 320
 Ser His Leu Arg Lys Leu Val Pro Gly Phe Gly Lys Ala Tyr Thr Ile
 325 330 335

Ile Asn Lys Thr Leu Met Glu Ala Asp Ala His Tyr Lys Ser Val Arg
 340 345 350

Glu Trp Xaa Glu Ile Ile Pro Ser Lys Gly Cys Leu Lys Ala Gly Gly
 355 360 365

Arg Cys His Pro His Xaa Asn Gly Val Phe Phe Asn Gly Ile Ile Leu
 370 375 380

Gly Pro Asp Gly His Val Leu Ile Pro Glu Met Gln Ser Ala Leu Leu
 385 390 395 400

Gln Gln His Ile Glu Leu Leu Glu Ser Ser Val Ile Pro Leu Arg His
 405 410 415

Pro Leu Ala Asp Pro Ser Thr Val Phe Lys Lys Asp Asp Glu Ala Glu
 420 425 430

Asp Phe Val Glu Val His Leu Pro Asp Val Gln Lys Xaa Ile Ser Gly
 435 440 445

Ile Asp Leu Gly Leu Pro Glu Trp Lys Arg Tyr Phe Leu Ile Gly Ala
 450 455 460

Ser Ala Leu Ala Leu Leu Ala Leu Ala Ile Ile Ile Ala Val Cys Cys
 465 470 475 480

Lys Arg Val Lys Arg Arg Arg Xaa Xaa Lys Pro Asn Pro Xaa Glu Leu
 485 490 495

Ile Arg Lys Val Ser Val Thr Ser Gln Ser Gly Lys Val Ile Pro Ser
 500 505 510

Trp Glu Ser Tyr Lys Xaa Gly Thr Xaa Gly
 515 520

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